

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

DI 1-23. (*Canceled*)

24. (*Currently Amended*) A method of fabricating an electroluminescent device including the steps of:

a) implanting a surface region of a silicon wafer, doped with a donor impurity to render the wafer n-type, with an acceptor impurity such that the surface region has a volume concentration of the acceptor impurity which is greater than a volume concentration of the donor impurity;

b) anodizing the wafer under illumination to produce a luminescent porous silicon region extending through the surface region; and

c) depositing an electrode on the porous silicon region;

wherein a condition (i) is satisfied, wherein condition (i) requires that at least a part of the surface region has an acceptor impurity volume concentration comparable with the solid solubility limit of the acceptor impurity in silicon;

and wherein at least one of the following conditions are satisfied:

(ii) the surface region has a sheet resistivity greater than 100 Ω per square immediately prior to the anodizing step;

D1 (iii) less than 1% of the acceptor impurity is electrically active prior to the anodizing step;

(iv) the silicon wafer does not receive an anneal between steps (a) and (b); and

(v) the anodization step (b) causes surface doping of silicon quantum wires within the porous silicon region, rendering the surface doped quantum wires p-type.

25. *(Previously Presented)* A method of fabricating an electroluminescent device according to claim 24, wherein, at least one of conditions (ii) to (v) apply, and the anodization step (b) comprises the step of anodizing the wafer in aqueous hydrofluoric acid in such a manner that microporous porous silicon is formed.

26-31. *(Canceled)*

D2 32. *(New)* A method of fabricating an electroluminescent device including the steps of:

a) implanting a surface region of a silicon wafer, doped with a donor impurity to render the wafer n-type, with an acceptor impurity such that the surface region has a volume concentration of the acceptor impurity which is greater than a volume concentration of the donor impurity;

D²
b) anodizing the wafer under illumination to produce a luminescent porous silicon region extending through the surface region; and

c) depositing an electrode on the porous silicon region;

wherein at least one of the following conditions is satisfied:

(i) that at least a part of the surface region has an acceptor impurity volume concentration comparable with the solid solubility limit of the acceptor impurity in silicon;

(ii) the surface region has a sheet resistivity greater than 100 Ω per square immediately prior to the anodizing step;

(iii) less than 1% of the acceptor impurity is electrically active prior to the anodizing step;

(iv) the silicon wafer does not receive an anneal between steps (a) and (b); and

(v) the anodization step (b) causes surface doping of silicon quantum wires within the porous silicon region, rendering the surface doped quantum wires p-type.

33. (New) A method of fabricating an electroluminescent device according to claim 32, wherein, at least one of conditions (ii) to (v) apply, and the anodization step (b) comprises the step of anodizing the wafer in aqueous hydrofluoric acid in such a manner that microporous porous silicon is formed.

D²
34. (New) A method of fabricating an electroluminescent device including the steps of:

- a) implanting a surface region of a silicon wafer, doped with a donor impurity to render the wafer n-type, with an acceptor impurity such that the surface region has a volume concentration of the acceptor impurity which is greater than a volume concentration of the donor impurity;
- b) anodizing the wafer under illumination to produce a luminescent porous silicon region extending through the surface region; and
- c) depositing an electrode on the porous silicon region, wherein the surface region has a sheet resistivity greater than 100 Ω per square immediately prior to the anodizing step.

35. (New) A method of fabricating an electroluminescent device according to claim 34, wherein the anodization step (b) comprises the step of anodizing the wafer in aqueous hydrofluoric acid in such a manner that microporous porous silicon is formed.

36. (New) A method of fabricating an electroluminescent device including the steps of:

- a) Implanting a surface region of a silicon wafer, doped with a donor impurity to render the wafer n-type, with an acceptor impurity such that the surface region has a

D²
volume concentration of the acceptor impurity which is greater than a volume concentration of the donor impurity;

b) anodizing the wafer under illumination to produce a luminescent porous silicon region extending through the surface region; and

c) depositing an electrode on the porous silicon region, wherein less than 1% of the acceptor impurity is electrically active prior to the anodizing step.

37. (New) A method of fabricating an electroluminescent device according to claim 36, wherein the anodization step (b) comprises the step of anodizing the wafer in aqueous hydrofluoric acid in such a manner that microporous porous silicon is formed.

38. (New) A method of fabricating an electroluminescent device including the steps of:

a) implanting a surface region of a silicon wafer, doped with a donor impurity to render the wafer n-type, with an acceptor impurity such that the surface region has a volume concentration of the acceptor impurity which is greater than a volume concentration of the donor impurity and at least a part of the region has an acceptor impurity volume concentration comparable with the solid solubility limit of the acceptor impurity in silicon;

b) anodizing the wafer under illumination to produce a porous silicon region extending through the surface region; and

- D²
- c) depositing an electrode on the porous silicon region.

39. (New) A method of fabricating an electroluminescent device including the steps of:

- a) implanting a surface region of a silicon wafer, doped with a donor impurity to render the wafer n-type, with an acceptor impurity such that the surface region has a volume concentration of the acceptor impurity which is greater than a volume concentration of the donor impurity;
- b) anodizing the wafer under illumination to produce a luminescent porous silicon region extending through the surface region; and
- c) depositing an electrode on the porous silicon region, wherein the silicon wafer does not receive an anneal between steps (a) and (b).

40. (New) A method of fabricating an electroluminescent device according to claim 39, wherein the anodization step (b) comprises the step of anodizing the wafer in aqueous hydrofluoric acid in such a manner that microporous porous silicon is formed.

41. (New) A method of fabricating an electroluminescent device including the steps of:

- a) implanting a surface region of a silicon wafer, doped with a donor impurity to render the wafer n-type, with an acceptor impurity such that the surface region has a

D2
volume concentration of the acceptor impurity which is greater than a volume concentration of the donor impurity;

b) anodizing the wafer under illumination to produce a luminescent porous silicon region extending through the surface region; and

c) depositing an electrode on the porous silicon region, wherein the anodization step causes surface doping of silicon quantum wires within the porous silicon region, rendering the surface doped quantum wires p-type.

42. (New) A method of fabricating an electroluminescent device according to claim 41, wherein the anodization step (b) comprises the step of anodizing the wafer in aqueous hydrofluoric acid in such a manner that microporous porous silicon is formed.
